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10/018,727	08/09/2002	Colin Robert Willis	41577/266144	5079

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John S Pratt
Kilpatrick Stockton
Suite 2800
1100 Peachtree Street
Atlanta, GA 30309-4530

EXAMINER

PADGETT, MARIANNE L

ART UNIT	PAPER NUMBER
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1792

MAIL DATE	DELIVERY MODE
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12/31/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/018,727

Applicant(s)

WILLIS ET AL.

Examiner

Marianne L. Padgett

Art Unit

1792

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 October 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,4,7,12 and 21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-4,7, 12, 21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

1. Applicants' amendments to the claims have overcome the 112, second paragraph rejection, thus making the scope of the claims commensurate in scope with the preamble, but have not overcome the art rejections for reasons as set forth below.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. **Claims 1, 3-4, 7, 12 & 21** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Connell et al** (UK 1,037,144), in view of **Timmons et al** (5,876,753) or visa versa, previously discussed in sections 9-10, 5, 3, 3 & 4 of the actions mailed 1/12/2005, 9/28/2005, 3/21/2006, 8/28/2006 & 5/17/2007, respectively.

In **Connell et al**, see Fig. 1, p. 2, lines 26-53 & 87-128+ for plasma apparatus and parameters used in the plasma polymerization process, and see p. 2, lines 66-72 for a variety of monomers that includes epoxies, such as glycidyl methacrylate (line 70), which according to the PCT examination & applicants' specification (page 5, lines 6-8, which gives this compound as an example of applicants' formula III) reads on the monomer used in these claims. From the structure of glycidyl acrylate (p. 569 of Hawley's

Cond. Chem. Dictionary, 12th ed), it is clear that the analogous methacrylate compound corresponds to applicant's formula (II), where $R_1 = \text{CH}_3\text{CH}=\text{CH}$; $n = 1$; for the $-\text{CH}_2-$ group, thus confirming the PCT evaluation.

While Connell et al teach plasma polymerization of claimed monomers, they do not discuss use of pulsed plasma and parameters associated therewith, nor reactive potential of resultant epoxy functionalized coated surface with a nucleophile, such as an amine or carboxylic acid as independent claims 12 & 21.

Timmons et al teach plasma polymerization of monomers using continuous or pulsed plasma, where use of low energy plasma, as exemplified by a pulsed plasma of 200 W and on-off duty cycles of 3/5, 3/15, 3/45 and 3/60 ms, which are lower values than can be calculated from the present claims ON/OFF times of claims 7 (i.e. 2/1000 & 1/1000 as possible maximums & minimums). **Use of such low energies is taught to enable the deposited polymer to retain active functional groups that can be employed in a derivation reaction to covalently couple to these groups, which are taught to include various O-containing fictionalization, including epoxy (table on col. 9).** The derivatization is said to be a variety of nucleophilic displacement, which may use various amino containing materials that are a subset of the claimed amines. See the abstract; col. 3, lines 45-col. 4, line 38, esp. col. 3, lines 50-55 & 62-col. 4, lines 5, 24 & 30-38; col. 6, lines 15-col. 7, line 45+; col. 8, line 1-6; col. 9, lines 1-32. It would have been further obvious to one of ordinary skill in the art when employing the pulsed plasma process to determine desirable ranges of pulsed plasma parameters for the polymerization reaction via routine experimentation to provide an effectively low power plasma as taught by Timmons et al, especially given their teaching on col. 7-8, that **different reaction chambers provide additional variables for determining parameters**, and employing taught power, on/off relationships as a guide to power (hence power density) and cycle time determination. It is noted that besides not actually disclosing the any explicit duty cycle ranges, **applicants' specification** does not provide any particular significance to either

the specific examples or general ranges of ON/OFF time from which some possible duty cycles may be calculated, nor to duty cycle in general, **considering determination of "pulsing arrangements" to be "routine" (page 6, lines 17-18)**, hence no unexpected or critical results is seen to be taught in association with these claimed values, especially considering the general concept is covered by Timmons et al.

While Timmons et al include epoxy-containing monomers in their teachings, exemplified by allyl glycidylether; they do not disclosure compounds of applicants' particularly claimed epoxy formulas.

Also the particular energy density and on-off time parameter are not explicitly taught.

It would have been obvious to one of ordinary skill in the art to employ the pulsed plasma process in the deposition of Connell et al or the monomer, glycidyl methacrylate, in the process of Timmons et al, because in the first case, Timmons teaches the equivalent usage of continuous or pulsed for plasma deposition (abstract), but further provides advantages in energy control due to use of pulsed plasma, that enables further use of the deposits for the claimed process of immobilizing a nucleophilic reagent without further modification, thus suggesting the desirability of pulsed plasmas & motivating their use instead of continuous plasmas. Use of Connell et al's monomer in Timmons et al's process, would have been obvious, as it is consistent with the generic categories of useful compounds taught, capable of providing desired functional groups for the subsequent derivatization/immobilization reaction, and has been shown to be effectively deposited via plasma polymerization, which is the process employed by Timmons et al.

It would have been further obvious to one ordinary skill to determine desirable ranges of pulsed plasma parameters for the polymerization reaction for specific monomers via routine experimentation to provide an effective low power plasma as taught by Timmons et al, especially given their teaching on col. 7-8, that different reaction chambers provide additional variables for determining parameters, and employing taught power, on/off relationships as a guide to power usage (hence power density) and cycle time determination. Note while Timmons et al provides some exemplary powers, they do not give power density, which can not be specifically determined or explicitly compared, if plasma volume is not known,

but energy density is related to the above routine experimentation to determine parameters, hence would have been expected to be considered by one of ordinary skill and competence in the art.

Independent claim 1 presently requires "an average power density of the pulsed plasma discharge is less than 0.0025 W/cm^3 ", which narrowed from less than 0.05 W/cm^3 ", previously discussed, but is still germane to the routine experimentation arguments. Hence, it remains considered that while the applied references do not provide values of power density *per se*, Timmons et al. was previously noted to provide **teachings on routine experimentation to provide an effective low power plasma** in col. 7-8.

Particularly see therein lines 28-45 in col. 7, which discuss how the volume of the reactor chamber affects power density in plasmas of like power, stating "large reaction volume at a given applied power would also provide increase retention of monomer functional groups, as this variation in effect decreases the power density during plasma polymerization processes", thus from the teachings of Timmons et al., it is considered that it would have remained clear to one of ordinary skill in the art to employ routine experimentation to adjust one's power density for the particular reagents employed, so as to provide desired retention of monomer functional groups as taught, which from the teachings of Timmons to effect low-power plasmas, that take into consideration volume, would have been expected to include optimization to relatively low powers, such as those within power densities claimed. The narrower claimed power density range was not considered to provide a significant differentiation from teachings of routine experimentation for essentially optimization purposes, especially considering that **applicants' specification** provides no determinable actual evidence or data for the superiority of the presently claimed average power density range as combined with time or ON/OFF times over any other average power density range or cycle times used in another pulsed plasma, that can be **necessarily** derived from the specification as originally filed.

Applicants have previously alleged (bottom p.7, 12/30/2005 remarks) that Timmons et al. teach away from "low pulsed plasma discharge", however this "low" had no clear meaning & their following

discussion concerning pulsed low duty cycles was & remains irrelevant to most the claims, as the unsupported duty cycle ranges were deleted from the claims. Applicants' previous discussion (top p.8, 12/30/2005 remarks) of depositions using "pulses of extremely low mean power (0.04 W)" with reference to examples 4 & 5 on page 9, was noted to be inconsistent with the **applicant's specification's** examples, as none of the examples on p. 9 -10, i.e. examples 1-9, have any teachings of "mean power", as they all provide only a "peak power = 40W", which even given the ON and OFF times of the plasma, does not provide sufficient information to calculate an arithmetic mean power, as **peak power** is the **highest value** reached providing no other information on what percentage of the ON time is at peak power or instantaneous power values during the ON period, nor would such a value have any relevant meaning with respect to the present claim limitations, which relate to power density, thus require one to know the plasma volume. The examiner noted that $< 0.05 \text{ W/cc}$ & the preferred range of $< 0.0025 \text{ W/cc}$ was introduced on page 6, lines 10-12, where the "average power of the pulsed plasma discharge" would in context more properly read --average power density...--, however the context of the specification would imply that this is the average power over the duration of the pulses only, because that's when the discharge is taking place, but discussion concerning duty cycle, which is only relevant to claim 7, suggest averaging over both the pulses ON-time and OFF-time. As the examiner noted no teachings of plasma volume for the particular taught ranges of $(20 \mu\text{s ON})/(10,000\text{-} 20,000 \mu\text{s OFF})$, she sees no way to relate the claimed plasma power density values to the exemplary 40 W peak power used with the exemplary ON/OFF times $(20 \mu\text{s}/20 \text{ ms})$, hence the examples are not commensurate in scope with the claim limitations. Is it possible that a declaration/affidavit could be presented that provided more complete information on the examples in the specification, such that a clear relationship could be determined between the claimed power density & the information of the specific examples? Note, it would still be necessary for the claims to be commensurate in scope with any evidence said to show a patently significant difference.

With respect to specification teachings relating to criticality of the pulsed plasma parameter of power density (i.e. $< (0.05 \text{ or } 0.0025) \text{ W/cc}$), the only place it was found to be mentioned was on page 6, lines 10-12, where it was never particularly related specifically to any of the individual compounds, nor more than generally to the on-off times (i.e. duty cycle). None of the examples disclose what power densities were used to produce their results, only providing teachings comparing continuous wave plasma and pulsed plasma, where the pulsed plasma used specific parameters of a peak power of 40 W, with 20 μs ON time/20 ms OFF time, which as discussed above provides no determinable significance to the power density in the independent claim 1. While the compositional data on the deposits comparing continuous plasma and pulsed pulsed, show significant differences therebetween, those differences are consistent with the teachings of Timmons et al., who notes that as compared to continuous plasmas, pulsed plasmas are expected to increase retention of functional groups, such that one would have expected that an increased percentage of heteroatoms a functional groups, such as oxygen, to remain. Thus **lacking a showing** that this particular range of **power densities** has a **significantly** different or unexpected effect in the deposition of the claimed compounds, as compared to higher power densities also for pulsed plasmas (i.e. not just the expected trends & affects suggested by the teachings of Timmons et al.), or that claimed compounds as compared to other epoxy monomers are significantly differently affected (examples 1 & 4 of the specification hint at that for GMA & AGE, but are not commensurate in scope with the claims (see above concerning parameters)), the examiner finds no patentable significance in this particular narrower range for the claims as written, as it appears to be consistent with routine experimentation to optimize pulsed plasma parameters, and expected taught trends associated with pulsed low-power plasmas.

4. As stated in section 6 of the 9/28/2005 action, it remains noted that FR 2,581,991 to Delfort et al cited by PCT, continues to provide cumulative evidence that the amine groups provided to the active epoxy functional groups on the coated surface, would have been expected to proceed in a covalent

coupling reaction or derivatization at the site of the epoxy as suggested and claimed, as well as providing further evidence of the known desirability of such reaction products.

5. Claims 1, 3-4, 7, 12 & 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Timmons et al** ((753), discussed above in section 4), in view of **Kolluri et al** (5,723,219), previously discussed in sections (10 & 12-13), (3 & 5), 5 & 6 of the actions mailed 1/12/05, 3/21/2006, 8/28/2006 & 5/17/2007, respectively, and reiterated below.

As noted above Timmons et al teach allyl glycidyl ether (AGE) as an **exemplary epoxy-** containing monomer, instead of the claimed epoxy compounds represented by claimed formulas II or the more specific formula III, but Kolluri et al also teach analogous plasma polymerization reactions, where either **AGE or GMA** are taught to be **deposited for their reactive epoxy functional groups**, hence use of GPA in Timmons et al would have been expected to be effective for the taught process due to taught equivalence, providing an alternative species for the generically taught epoxy containing monomers. Above discussions of routine experimentation are equally applicable in this combination, as previously noted.

In Kolluri et al., see the abstract; col. 2, lines 35-57+ for prior art plasma polymerization and its limits; col. 3, lines 5-26 for background discussion of **pulsed plasma polymerization to preserve functional groups** in deposited films; summary for sequential plasma depositions; col. 5, lines 40-49 for classes of monomer including **epoxies**, with lines 47-48 teaches allyl glycidyl ether, glycidyl methacrylate (GMA), etc; col. 6, lines 5-30 teaching various amines & lines 60-67 plasma in general; col. 7, table I gives surface functional groups where the functional group remaining on the surface for 1st plasma deposited layer is in the first column of table I, and what it reacts with in the 2nd column & what's produced in the last column, where #13 and 14 give specific examples that react amines functional groups with epoxy functional groups on the surface; col. 8, line 62-col. 9, line 14, esp. 3 and 10-11 with such suggested combinations; col. 9, 15+ with specific examples noting plasma may be pulsed (col. 9, line 50;

col. 10 line 52; col. 12, line 56-57, etc); col. 16, line 30-60; & col. 20, line 18-col. 21, line 23 discussing and illustrating first plasma deposition using GMA, then plasma depositing an amine thereon via reaction with the epoxy group; and claims 1, 4-6, etc.

Applicants have previously objected to Kolluri et al. because the epoxy group is only one example of various functional groups that may be plasma deposited, however suggesting alternative functional groups in no way negates the teachings of the usefulness or the effectiveness of plasma and polymerization to achieve epoxy functionalized coatings.

6. Claims 1, 3-4, 7, 12 & 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Timmons et al** ((753), discussed above in section 4), in view of **Chabreck et al.** (WO 98/28026), previously discussed in section 9 of the action mailed 5/17/2007.

Chabreck et al. provide teachings concerning plasma polymerization mechanisms for unsaturated (i.e. vinyl groups, p.9) monomers carrying reactive groups, such as epoxies, where it is desired to retain the reactive groups or functionalities on the plasma polymerized coating, where the last paragraph on p.4 teaches that epoxy groups are particularly susceptible to plasma decomposition. Chabreck et al. teach that controlling & retaining the functional groups on deposits of the plasma polymerized unsaturated monomers with reactive groups, such as GMA (p.33, Ex.B-5), is effected by use of the afterglow of the plasma, which is mechanistically equivalent to the off-time in a pulsed plasma process. Additionally, when discussing useful plasma parameters, Chabreck et al. teach that the plasma is preferably "an inductively coupled, pulsed radio frequency glow discharge plasma" (page 11, especially last two lines). Chabreck et al. further teach that their primary plasma problem arise coatings with reactive groups, such as epoxies, may be further reacted, such as with solutions where the compositions have groups reacted with the retained reactive group of the polymerized coating, with examples C-14 & C-15 on page 38 employing the plasma polymerized coating of GMA to react with solutions of "4-amino-Tempo" or "Jaffamine ED2001", which appear to be tradenames for amine-containing compounds. In

Chabreck et al., further see the abstract; 1st paragraph, p.1; p. 3-6, especially the paragraph bridging p. 5-6+ following paragraph; page 7, 3rd full paragraph, noting suggested -containing molecules for the top or secondary coating, such as methylamine; p.12, especially paragraph bridging with 13; paragraph bridging p. 16-17 through p. 19, especially top & metal paragraphs p.17).

Given the above teachings of Chabreck et al. on the need to protect functional groups like epoxies on monomers, such as GMA, from the decomposition effects of plasma in order to provide plasma polymerized epoxy functionalized coatings to be used for further reaction was secondary coatings that may contain amines, it would have been obvious to one of ordinary skill in the art to employ unsaturated epoxy containing monomers, such as GMA, in the pulsed plasma process of Timmons et al. as discussed above, as Chabreck et al. indicate that GMA requires protection from the decomposition effects of an *in situ* continuous plasma in order to provide plasma polymerized depositions that retained the epoxy functional group, while simultaneously indicating that pulsed plasmas that employ the afterglow from the plasma discharge will both enable such retention of epoxy functionalities in the deposited coating and effectively polymerized the GMA, hence the examiner takes notice that one of ordinary skill in the art would recognize the correspondence with the pulsed plasma teachings of Timmons et al., as well as the resultant coatings usefulness for reacting with secondary coatings, such as amines, and thus apply the above discussed teachings of routine experimentation in Timmons et al. to determine effective pulsed plasma parameters for GMA used in Timmons particular pulsed plasma polymerization deposition technique.

7. As previously recited, art of interest included: Kokaku et al. (4,863,557: col. 3, lines 3-16 & col. 4, lines 4-22; & 4,560,641; col. 3, lines 39-68, especially 63-67 & col. 6 examples 5 & 6), who teach GMA & AGE or glycidyl vinyl ether as used equivalently for plasma polymerization deposition; and Taguchi et al. (2003/0124382 A1), who in [0039] terms glycidyl acrylate, GMA & AGE, as all being classed as epoxy-containing vinyl monomers; thus all showing expectations of analogous chemistry &/or

analogous plasma polymerization reactions. Note that Kokaku et al. (557), while not teaching the necessity of having remaining epoxy functionalities, nor pulsed plasma, does indicate that for their 13.56 MHz H.F. plasma at monomer pressures of 0.01-5 Torr, that appropriate ranges of plasma density include 0.01-10 W/cm². Similarly, Yokura et al. (JP 01-171856) reforms plasma polymerization, particularly of acrylic or methacrylic compounds having a glycidyl group, where the English abstract particularly exemplifies glycidyl methacrylate preformed at pressure = 0.12 Torr & a power density discharge of 400 Wmin/m², which is equivalent to 0.04Wmin/cm², thus it is noted that it is old and well-known in the art to employ relatively low power density is for plasma polymerization of GMA, even when there is no necessity in the teachings stating the desirability of maintaining the presence of the glycidyl (= epoxy groups) on the surface of the deposited layer, hence these references can be considered to provide evidence in support of or cumulative to the above discussed teachings of Timmons et al., as combined with the above rejections, as a person of ordinary skill in the art when employing the teachings of routine experimentation would have reasonably considered such known power densities as maximum starting points for routine experimentation for preserving epoxy groups on GMA, given teachings suggesting that retention of the epoxy groups require lower power. It would be a matter of competence for a person of ordinary skill to consider variation in plasma parameters of particular reagents based on known parameters for related plasma polymerizations in combination with Timmons teachings on how to preserve functional groups on plasma polymerized depositions.

An update of the search found Hitachi LTD's JP 58-66938, as indicated by its 2007 Derwent abstract to be of interest for plasma polymerization of materials intended to the far-UV sensitive, where the abstract specifically indicates glycidyl methacrylate as being a useful material therefore, but the abstract contains no information on whether or not pulsed plasmas were contemplated, nor whether or not the plasma polymerized deposit contains reactive epoxy groups.

8. Applicant's arguments filed 10/17/2007, and discussed above have been fully considered but they are not persuasive.

On page 8 of their 10/17/2007 response, starting in the first full paragraph applicants, appear to be attempting ascribe information to their specification which is not actually derived from the original specification or necessarily supported therein, hence these arguments are not convincing. For instance, the peak power is not the power that is produced for the full time that the power is ON, only required to be the maximum power that it reaches while ON, hence lacking support cannot be used as proposed in applicants' arguments to derive the average power density. Nowhere does applicants' specification, for reasons as discussed above/previously, necessarily support averaging the power for time totaling both the ON & OFF times, although to do so would be logical & more relevant, but unfortunately is not necessitated by the original disclosure, but you still need to know how the power varied for the time it was all ON, not just its peak value. Where applicants are deriving their "flask volume" from, appears to be purely speculative, having no basis in the disclosure. Also the examiner notes, while the volume of the plasma is important in determining its average power density, the volume of the container or chamber (i.e. flask?), may or may not be important, depending on the operation of the particular plasma apparatus.

For these reasons & previously discussed reasons, applicants' allegations on page 8 of their response are not supported by the specification & do not provide teachings that are necessarily applicable thereto. Note, just because a person of ordinary skill in the art **might** suspect that such calculations **may** have been used or appropriate with respect to applicants' disclosure, & reasonably apply them to the specification to create reasonable approximations for starting parameters, it does not necessitate that this is what the inventor's in the specification actually did & applicants' allegations do not even actually suggest that such calculations or volumes were actually used. As the relationships between power density, peak power, on & off times, [plasma] volume, etc. as discussed by applicants are not necessitated by the specification, the examiner can not use such unsupported speculative derivations as represented by

these allegations as a basis for patentable significance that could lead to allowance. Therefore, the amended claims remain considered obvious as set forth in the above rejections & as **lacking any clear evidence** of unexpected results with respect to the parameters & the now more specifically claimed precursor materials, since as set forth in the above rejections the preponderance of the evidence indicates routine experimentation for optimization for specific apparatus & material would have been expected to achieve results as claimed, with reactive epoxy functional groups retained in polymerized deposits.

Applicants again assert that one of ordinary skill would not make the combination of Timmons et al. with any of the references combined therewith by the examiner, partially basing their arguments on the incorrect statement that "Timmons et al. fails to mention epoxy monomers" (page 6, 10/17/07 response) & the like, again making arguments concerning the chemistry of the monomers of Timmons being different from that disclosed by Connell et al. or Kolluri et al. or the recently added Chabreck et al., but denying epoxies are present in a reference that mentions epoxy (see above), simply cannot be convincing, hence the arguments again failed to be convincing concerning how epoxy groups, including epoxy groups of overlapping compounds provide different chemistry (Connell et al. (p.2, lines 70-71) or Kolluri et al. (col. 5, lines 46-48)), i.e. as previously discussed, how does the identical epoxy functional group and/or monomer therewith have different chemistry from the identical epoxy functional group, especially when all three references discussed plasma polymerization with respect to allyl glycidyl ether (AGE), with Cornell et al. or Kolluri et al. listing GMA & AGE sequentially as alternatives for plasma polymerization? In Timmons et al., col. 8, lines 51-col. 9, lines 32, specifically note that "low-power plasma polymerization processes, particularly pulsed plasmas, can be utilized to provide surface films having an enormous range of reacted functional groups...", where the partial list of useful monomers that may supply intact functional groups includes allyl glycidyl ether, whose functional group intended to be deposited intact via plasma is epoxy, and which compound is taught alternatively with the claimed compound GMA in Connell et al. or Kolluri et al., hence can hardly be said to be directed to

nonanalogous chemistry, especially considering that Kolluri et al. also acknowledges the effects of pulsed plasma on functional group retention, as well as mentioning the possibility of using pulsed plasmas for plasma polymerization (col. 3, lines 5-30; col. 9, line 50-52; col. 10, lines 52-55; col. 12, lines 56-58; etc.), although not providing a 102 rejection by discussing use of the pulsed plasma with GMA specifically.

On page 6-7 of the 10/17/07 response applicants repeat previous arguments discussing pulsed plasma affects on free radical initiate polymerization, particular directed to monomers containing acrylate or methacrylate, so as previously stated it remains relevant that applicants have not pointed out such teachings on free radical polymerization in the specification, nor are the claims limited to free radical polymerization, although applicants have amended the claims to require formula II that is positively related to acrylates, hence applicants' arguments still contain unsupported allegations, but are at least commensurate in scope with the claim language with respect to acrylates & the now required presence of reactive epoxy in the plasma deposited coating. The examiner previously noted applicants do have some comparison studies on page 16-18 of the specification directed to allyl glycidyl ether, but as discussed above lack determinable relationship to claimed power density parameters, and no discussion of free radical polymerization is found therein, nor do the claims necessarily differentiate from the type of results produced by pulsed plasma with such materials as polymerization occurs with either continuous or pulsed, as well as having observed indication of presence epoxy functional groups remaining (AGE plasma polymerization (continuous & pulsed) results discussion admit to **some remaining epoxy groups**). To repeat, is it possible that a declaration/affidavit could be presented that provided more complete information on the examples in the specification, such that a clear relationship could be determined between the claimed power density & the information of the specific examples, and thus might show conclusive evidence of significant differences between types of epoxy monomers relating to claimed pulsed plasma parameters? Note, it would still be necessary for the claims to be commensurate

in scope with any evidence said to show a patently significant difference, noting that claimed formula I A of an aromatic epoxy, cannot be considered sufficiently analogous to GMA for the GMA examples to provide evidence therefore.

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marianne L. Padgett whose telephone number is (571) 272-1425. The examiner can normally be reached on M-F from about 8:30 a.m. to 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks, can be reached at (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

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12/21/2007



MARIANNE PADGETT
PRIMARY EXAMINER